

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims

Claim 1 (withdrawn) A carbon nanotube mesh comprising:

a plurality of intertwined free-standing carbon nanotubes fixedly attached to a substrate for separating, concentrating, and/or filtering molecules flowed through said mesh.

Claim 2 (withdrawn) The carbon nanotube mesh of claim 1,

wherein said carbon nanotubes extend randomly into free space from said substrate characteristic of free-growth structures.

Claim 3 (withdrawn) The carbon nanotube mesh of claim 1,

wherein the surfaces of said carbon nanotubes are functionalized to chemically select/discriminate molecules.

Claim 4 (withdrawn) The carbon nanotube mesh of claim 3,

wherein the surfaces of said carbon nanotubes are functionalized with a nanotube coating.

Claim 5 (withdrawn) The carbon nanotube mesh of claim 4,

wherein the nanotube coating comprises a chemical derivatization.

Claim 6 (withdrawn) The carbon nanotube mesh of claim 1,

wherein said carbon nanotube mesh has pore sizes of 10 to 200 nanometers.

Claim 7 (currently amended) A method of fabricating a carbon nanotube mesh,
comprising:

depositing a thin film of iron as a CVD growth catalyst on a substrate; and
growing passing products of hydrocarbon pyrolysis over the CVD growth
catalyst to grow a plurality of intertwined free-standing carbon nanotubes on
and randomly extending from a the substrate to produce the carbon nanotube
mesh fixedly attached thereto, and said growing step including controlling CVD
pyrolysis parameters to produce irregularly sized mesh pores of 10 to 200
nanometers between said nanotubes capable of separating, concentrating,
and/or filtering molecules flowed through said carbon nanotube mesh.

Claim 8 (canceled)

Claim 9 (currently amended) The method of claim 5 ~~5~~ 7,

further comprising functionalizing the surfaces of said carbon nanotubes to chemically select/discriminate molecules.

Claim 10 (original) The method of claim 9,

wherein the surfaces of said carbon nanotubes are functionalized by applying a nanotube coating having the desired functionality.

Claim 11 (original) The method of claim 10,

wherein the nanotube coating comprises a chemical derivatization.

Claims 12 and 13 (canceled)

Claim 14 (currently amended) The method of claim ~~13~~ 7,

wherein the CVD growth process includes pyrolysis of a mixture of ethylene, hydrogen, and argon at 850 degrees Celsius.

Claims 15 and 16 (canceled)

Claim 17 (currently amended) The method of claim ~~16~~ 7,

wherein the thin film iron catalyst has a thickness of about 5 nanometers.

Claim 18 (withdrawn) A carbon nanotube mesh produced according to the method of claim 7.

Claim 19 (withdrawn) A method of separating, concentrating, and/or filtering molecules comprising:

flowing said molecules into a carbon nanotube mesh comprising a plurality of intertwined free-standing carbon nanotubes fixedly attached to a substrate, whereby said carbon nanotube mesh operates as an active medium for separating, concentrating, and/or filtering said molecules.

Claim 20 (withdrawn) The method of claim 19,

wherein the flow into the carbon nanotube mesh is a pressure driven flow.